

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of : Attorney Docket No. 2006\_1256A  
Toshiaki KURACHI et al. : **Confirmation No. 8440**  
Serial No. 10/588,544 : Group Art Unit 2821  
Filed August 7, 2006 : Examiner Jianzi Chen  
DIELECTRIC BARRIER DISCHARGE : **Mail Stop: APPEAL BRIEFS-PATENTS**  
LAMP LIGHTING DEVICE

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**APPELLANTS' BRIEF**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

The following is Appellant's Brief, submitted under the provisions of 37 C.F.R. § 41.37 and in response to the Office Action dated November 10, 2009 and the Advisory Action dated February 23, 2010.

**REAL PARTY IN INTEREST**

The real party in interest is Panasonic Corporation via a change of name document from Matsushita Electric Industrial Co., Ltd, which in turn received interest via an assignment from the inventors. The assignment from the inventors to Matsushita Electric Industrial Co., Ltd is recorded with the U.S. Patent and Trademark Office at Reel: 021079 and Frame: 0206 and the change of name document from Matsushita Electric Industrial Co., Ltd to Panasonic Corporation is recorded with the U.S. Patent and Trademark Office at Reel: 021897 and Frame: 0588.

### **RELATED APPEALS AND INTERFERENCES**

There are no known related appeals, interferences, or judicial proceedings.

### **STATUS OF CLAIMS**

The Application was filed with original claims 1-7. In the final Office Action of November 10, 2009, the Examiner rejected pending claims 1-7 in view of the prior art. The rejection of claims 1-7 is being appealed. A complete copy of all of the pending claims is provided in the attached Claims Appendix.

### **STATUS OF AMENDMENTS**

No amendments were filed subsequent to the final Office Action of November 10, 2009.

It is noted that Remarks were filed on January 27, 2010, subsequent to the final Office Action of November 10, 2009, and were addressed in the Advisory Action of February 23, 2010.

### **SUMMARY OF CLAIMED SUBJECT MATTER**

Although specification citations are given in accordance with C.F.R. 1.192(c), these reference numerals and citations are merely examples of where support may be found in the specification for the terms used in this section of the Brief. There is no intention to suggest in any way that the terms of the claims are limited to the examples in the specification. As demonstrated by the references numerals and citations below, the claims are fully supported by the specification as required by law. However, it is improper under the law to read limitations from the specification into the claims. Pointing out specification support for the claim terminology as is done here to comply with rule 1.192(c) does not in any way limit the scope of the claims to those examples from which they find support. Nor does this exercise provide a mechanism for circumventing the law precluding reading limitations into the claims from the specification. In short, the references numerals and specification citations are not to be construed as claim limitations or in any way used to limit the scope of the claims.

As shown in Figs. 1, 2A and 2B, independent claim 1 is directed to a dielectric barrier discharge lamp lighting device for driving a dielectric barrier discharge lamp 1 having an inner electrode 3 and an external electrode 2, comprising a transformer T that includes a primary coil L11 and a secondary coil L12, and supplies a driving voltage to the dielectric barrier discharge lamp from the secondary coil (*see* pg. 6, lines 6-10), and a driving circuit 4 that controls an input voltage to the transformer T to supply the driving voltage with a driving frequency  $f_d$  to the dielectric barrier discharge lamp (*see* pg. 6, lines 10-13), wherein a self-resonant frequency  $f_r$  of the secondary coil L12, which is measured with the primary coil of the transformer being open, is equal to the driving frequency  $f_d$  or a frequency in the vicinity of the driving frequency  $f_d$  (*see* pg. 7, lines 7-13).

**GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

Whether claims 1-7 are unpatentable under 35 U.S.C. § 102(a) or (e) as being anticipated by Shiba (U.S. 2005/0093478).

## ARGUMENT

Rejection of claims 1-7-9, 12, 13, 18-20, 67 and 69 are rejected under 35 U.S.C. §102(e) or (a) as being unpatentable over Shiba

As stated above, independent Claim 1 recites a dielectric barrier discharge lamp lighting device for driving a dielectric barrier discharge lamp having an inner electrode and an external electrode, comprising a transformer that includes a primary coil and a secondary coil, and supplies a driving voltage to the dielectric barrier discharge lamp from the secondary coil, and a driving circuit that controls an input voltage to the transformer to supply the driving voltage with a driving frequency to the dielectric barrier discharge lamp, wherein a self-resonant frequency of the secondary coil which is measured with the primary coil of the transformer being open, is equal to the driving frequency or a frequency in the vicinity of the driving frequency.

As would be understood by one of ordinary skill in the art, the self-resonant frequency is determined based on parasitic capacitance and parasitic inductance of the coil of the transformer (see page 14 lines 18 to 25 of the present application).

Appellants submit that the cited prior art fails to disclose or render obvious such a device. "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Appellants submit that the cited prior art fails to disclose each and every element as set forth in independent claim 1. In particular, Shiba discloses a lighting device including a pulse number judging circuit for judging a number of drive signal pulses per unit time corresponding to the dimming ratio from the dimming control signal and outputting the result as the pulse number setting signal, and a drive signal generating circuit for outputting the drive signal pulses having a number of pulses per unit time designated by the pulse number setting signal.

The Examiner suggests that in the illustration of the closed circuit ( $V_{cc} \rightarrow C1 \rightarrow T1 \rightarrow Z2 \rightarrow S2 \rightarrow GND$ ) in Fig. 9 of Shiba, the self-resonant frequency is measured with the primary coil being open when the switching element S2 is open. See the November 10, 2009 Office Action, pgs. 2-3. However, Appellants respectfully disagree, and submit that the situation in which both switching elements S1 and S2 are open occurs only when both pulse widths of the signals S1 and S2 are narrow, as shown in Fig. 8 of Shiba, and at that time, the driving frequency is expressed by the inverse of the pulse cycle of the signals P1 and P2. However, Shiba fails to



disclose a self-resonant frequency at all, and thus cannot disclose a relation between the self-resonant frequency and the driving frequency.

Appellants submit that the driving frequency can be set independently from the circuit configuration; however the self-resonant frequency is specific to the transformer and is determined based on the parasitic capacitance and the parasitic inductance of the coil of the transformer. Arguably, Shiba implies, in paragraph [0050], that several types of frequencies can be used; however, Shiba clearly fails to disclose that the driving frequency is set to a frequency near the resonant frequency so as to prevent flickering in lamp luminance in dimming control.

In the present invention, the driving frequency can be set to a frequency near the resonant frequency which is specific to the transformer, thereby reducing power loss in the transformer. Thus, Appellants submit that Shiba fails to disclose each of the elements recited in independent claim 1, and the Examiner has failed to establish that the present invention is anticipated by Shiba.

Moreover, there is no reasoning in the prior art to modify Shiba such that it would have rendered claim 1 obvious. Any modifications of Shiba to render the claims of this application obvious would involve improper hindsight reasoning. Thus, Appellants submit that the Examiner cannot establish a *prima facie* obviousness rejection. *See In re Rinehart*, 531 F.2d 1048 (CCPA 1976). Therefore, independent claim 1 and its dependent claims are allowable over the cited prior art.

### **CONCLUSION.**

As noted above, none of the cited combination of references discloses or suggests all of the features recited in independent claim 1. Thus, it is respectfully submitted that independent claim 1 and the claims that depend therefrom (i.e., claims 2-7) are clearly patentable over the prior art of record, and so the Board of Appeals is respectfully requested to reverse the Examiner's prior art rejections set forth in the Office Action of November 10, 2009.

Respectfully submitted,

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### **APPENDIX - Claims on Appeal.**

1. (Original) A dielectric barrier discharge lamp lighting device for driving a dielectric barrier discharge lamp having an inner electrode and an external electrode, comprising:

a transformer that includes a primary coil and a secondary coil, and supplies a driving voltage to the dielectric barrier discharge lamp from the secondary coil; and

a driving circuit that controls an input voltage to the transformer to supply the driving voltage with a driving frequency  $f_d$  to the dielectric barrier discharge lamp,

wherein a self-resonant frequency  $f_r$  of the secondary coil, which is measured with the primary coil of the transformer being open, is equal to the driving frequency  $f_d$  or a frequency in the vicinity of the driving frequency  $f_d$ .

2. (Original) The dielectric barrier discharge lamp lighting device according to claim 1, wherein the self-resonant frequency  $f_r$  is set to satisfy  $0.9f_d \leq f_r \leq 1.3f_d$ .

3. (Original) The dielectric barrier discharge lamp lighting device according to claim 1, wherein the self-resonant frequency  $f_r$  is set to satisfy  $0.95f_d \leq f_r \leq 1.25f_d$ .

4. (Original) The dielectric barrier discharge lamp lighting device according to claim 1, wherein the self-resonant frequency  $f_r$  is set to satisfy  $1.0f_d \leq f_r \leq 1.2f_d$ .

5. (Previously Presented) The dielectric barrier discharge lamp lighting device according to claim 1, wherein the driving voltage is a voltage having a substantially rectangular waveform.

6. (Previously Presented) The dielectric barrier discharge lamp lighting device according to claim 1, wherein the driving circuit includes a push-pull inverter.

7. (Previously Presented) The dielectric barrier discharge lamp lighting device according to claim 1, wherein the driving circuit includes a half-bridge inverter.

## **EVIDENCE APPENDIX**

**None**

**RELATED PROCEEDINGS APPENDIX**

**None**